

Survivability of Recorded Data

Aviation Recorders

Fire Protection:

- * 30 min at 1100° C.
(1 hour)
- 10 hours at 260° C.

Impact Shock Protection:

3400 Gs for 6.5 ms.

Static Crush Protection:

5000 lb for 5 min. each axis.

Fluid Immersion Protection:

Immersion (fuel, oil, etc.) for
24 hours.

Sea Water Protection:

Immersion for 30 days.

Penetration Protection:

500 lb from 10 ft at 1/4 inch
point.

Hydrostatic Pressure Protection:

Pressure equal to depth of
20,000 feet.

* ED56 protocol

Rail Recorders

(Proposed)

Fire Protection:

- RSAC** - 1 hr at 1000° C (flame) & 10 hrs at 260° C (oven).
- FRA** - 1 hr at 750° C (oven) & 10 hrs at 260° C (oven).

Impact Shock Protection:

- RSAC** - 23 Gs for 250 ms duration.
- FRA** - 55 Gs for 100 ms duration.

Static Crush Protection:

- RSAC** - 25,000 lb. over whole face for 5 min, and
10,000 lb. Point load over 25% of surface area.
- FRA** - 25,000 lb over whole face for 5 min.

Fluid Immersion Protection:

- RSAC** - Immerse sequentially for 48 hrs in each: #1 or #2
diesel, water, salt water, lube oil, fire extinguishing
agent likely to cause damage (such as AFFF).
- FRA** - Immerse for 48 hrs in any of the following: #1 or #2
diesel, water, salt water, lube oil, and then in fire
extinguishing fluid for 10 min followed by 48-hr
dry-out.

Hydrostatic Pressure Protection:

- RSAC** - Immersion in 25° C water at 100 ft for 48 hrs.
- FRA** - Immersion in salt water at 50 ft for 48 hrs.

RSAC - Railroad Safety Advisory Committee
FRA - Federal Railroad Administration

Marine Recorders

Fire Protection:

- * 10 hours at 260° C
(Low Temp)
- * 1 hour, 1100° C
(High Temp)

Impact Shock Protection:

50 Gs for 11 ms.

Penetration Protection:

- * 250 kg with a 100 mm pin
dropped from 3 meters.

Deep Sea Pressure and Immersion Protection:

- * 60 MPa (6,000 meter depth).

* ED56 protocol